Government of Saskatchewan

Annual Report for the year ending March 31, 1987

Saskatchewan Science and Technology

Saskatchewan
Science and
Technology

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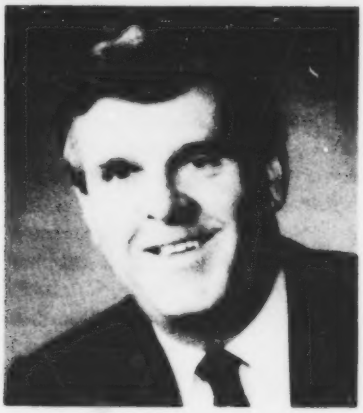
Minister's transmittal



Ray Meiklejohn
Minister

To His Honour
The Honourable F.W. Johnson
Lieutenant-Governor of Saskatchewan
Government House
Regina, Saskatchewan

December 8, 1987

May It Please Your Honour:

The undersigned has the honour to submit the Annual Report of Saskatchewan Science and Technology for the fiscal year ending March 31, 1987.

Respectfully submitted,

Ray Meiklejohn
Minister,
Saskatchewan Science and Technology

Deputy Minister's transmittal

Richard A. Letilley
Acting Deputy Minister

To the Honourable Ray Meiklejohn
Minister of Science and Technology
Regina, Saskatchewan

December 7, 1987

Dear Mr. Meiklejohn:

I have the honour of submitting the Annual Report of Saskatchewan Science and Technology for the year ending March 31, 1987.

Respectfully submitted,

Richard A. Letilley

Richard A. Letilley
Acting Deputy Minister

The strategy: Promoting advanced technology development

Recognizing technology's economic growth potential

Advanced technology industries, such as microelectronics, computer software, robotics, and instrumentation, are expected to realize the fastest rate of industrial growth occuring in the 1990s. As such, advanced technology occupies a strategic place in Saskatchewan's economic performance. Because advanced technology spans all economic sectors, it has the potential to strengthen Saskatchewan's economy in two ways: by applying technology processes and products to make traditional industries more efficient, and by stimulating the development of new industries.

Investing resources to research, develop, and produce advanced technology products and services offers Saskatchewan the promise of continued economic diversification and increased employment. In addition to developing new products, new technology is applied to existing industry to make it more efficient. This application of new technology is critical to securing the province's competitiveness. Consequently, there is a need for Saskatchewan to build technological strength, to improve its capability to innovate, and to maximize economic opportunities arising from the development and introduction of new technologies, products, and services.

Economic growth through applied technology requires a positive environment for innovation. It requires a strong industrial base in advanced technologies and supportive linkages between industry, government, and the scientific and educational communities.

Committing to action

In mid-1983, a science and technology strategy was announced by the Premier of Saskatchewan. The strategy recognized that economic, industrial, and social development in Saskatchewan depends on how well the province can develop, transfer, and utilize advanced technology. It affirmed Saskatchewan's support for developing a dynamic advanced technology sector in the province. On January 1, 1984, Saskatchewan Science and Technology was established and began building links between all segments of the advanced technology sector.

Responding to industry growth

The March, 1986 Speech from the Throne announced a new direction for the young Department. In only two years from the Department's formation, advanced technology in Saskatchewan mushroomed, with the number of the province's firms working in technology almost quadrupling. Through the initiatives of industry, the supportive environment for growth, and the risk-sharing efforts of government, a nucleus of advanced technology development centred in Saskatoon.

The University of Saskatchewan in Saskatoon has been called an incubator for advanced technology companies. At least twenty companies, including SED Systems Inc., Develcon Electronics Ltd., Biostar Inc., and International Road Dynamics Inc., trace their roots back to the university. Furthermore, a number of second generation firms have been spawned by those that grew out of the University of Saskatchewan incubator. The success of these incubator companies and the cluster of private and public research agencies, the university, and training institutions, has encouraged the development of a new, younger generation of independent high tech companies in and around Saskatoon.

In response to this growth, on September 2, 1986, the new head office of Science and Technology opened in Saskatoon. While the relocation was designed to further a move toward decentralization, it was also in direct response to the climate of growth in advanced technology in the province, which originated in Saskatoon. The move of the Department responded to the concentration of more than 50 percent of the province's advanced technology companies located in Saskatoon. The maintenance of a Field Office in Regina ensures that advanced technology companies in and around Regina continue to receive full service from the

Department. The new Saskatoon head office is strategically located at Innovation Place, Western Canada's first research and development park, adjacent to the University of Saskatchewan.

Initiatives to stimulate growth

Saskatchewan Science and Technology has a clear mandate which provides direction for the Department's work. All initiatives are directed at co-ordinating and facilitating science and technology activity in the province to stimulate the advanced technology industrial sector.

Specifically, Saskatchewan Science and Technology works to:

- stimulate the growth of industry in Saskatchewan by promoting the development, transfer, and utilization of technology;
- maximize economic benefits of advanced technology for the people of Saskatchewan;
- co-ordinate the research, science, and technology activities of industry, government, universities, and public research institutions;
- promote and co-ordinate international, federal, provincial, and inter-provincial science and technology initiatives to develop new technology in Saskatchewan;
- evaluate public policy questions related to advanced technology; and
- serve Saskatchewan people by promoting a dialogue on the implications and issues surrounding advanced technology.

This mandate, in action, has come to be known as the "Saskatchewan Model for Advanced Technology Development," and is considered by many as a blueprint for development in other Canadian provinces. The Model has a three-part focus:

- sharing the risk of advanced technology development through a partnership between advanced technology, industry, and government;
- making the right connections by stimulating the innovation process; and
- providing the means to build a solid infrastructure base.

Partners in enterprise

In Saskatchewan there is a clear recognition that industry is the driving force which pulls technology out of the laboratory and launches it onto the marketplace. Saskatchewan is well-known for its creative, enterprising, and aggressive innovators and entrepreneurs. These people put new ideas to work, turn advanced technology into new products or processes, and convert these products into sales.

The Saskatchewan government is industry's supportive partner in enterprise, sharing the financial risk with innovators and entrepreneurs. Saskatchewan Science and Technology offers programs and services specifically designed for the needs of advanced technology firms. These programs and services address the high cost of research and development, the financial risk of building advanced technology businesses, and the market uncertainty inherent in selling advanced technology products and processes.

Stimulating the innovation process

Advanced technology refers to products and processes which are at the leading edge of innovation and which provide new solutions for old problems. Innovation drives the advanced technology industry, and the process of innovation includes six interrelated components:

- basic research and development;
- technology roll-out;
- advanced technology company development;
- applied research and development;
- prototype to production; and
- marketing.

Making the right connections amongst these activities is the key to an integrated and dynamic innovation process.

Because the advanced technology sector is complex and diverse, it takes a concerted effort to make these connections. Saskatchewan Science and Technology brings together researchers, inventors, scientists, investors, and entrepreneurs in order to help make connections amongst the people involved in creating, developing, producing, and marketing new technology. This is accomplished by:

- serving innovators, inventors, and entrepreneurs engaged in basic research and development by referring them to experts for technical and commercial evaluations of innovations;
- assisting firms and laboratories with technology roll-out from the lab into advanced technology companies;
- helping entrepreneurs start up and build advanced technology companies;
- sharing the financial costs of research and development of new technology with Saskatchewan firms;
- providing new product development assistance to put prototypes into production and to manufacture new products; and
- supporting firms which are trying to compete in national and international markets.

Building a solid infrastructure base

Pressured by the fast-paced global advanced technology race, industry needs a support system in order to remain competitive. In Saskatchewan, this support system, or infrastructure, includes research and development, training, and business support organizations.

Saskatchewan firms are supported by a variety of research agencies housed in two universities, a provincial research council, federal research agencies, and numerous related and affiliated institutes and organizations.

Skilled employees are being trained in Saskatchewan at the province's universities, and four campuses of the Saskatchewan Institute of Applied Science and Technology.

And a network of established firms and business associations is providing support for new or young firms during critical times in the business cycle.

Saskatchewan has earned an excellent reputation for its infrastructure base. Through its programs, services, and policy development, Saskatchewan Science and Technology works to strengthen this base.

The action: Creating a supportive environment for growth

Delivering support to innovators and entrepreneurs

Saskatchewan Science and Technology serves advanced technology companies through an integrated service approach to programs. The source of program funds is the interest yielded by the $50 million Saskatchewan Heritage Fund. There are two main groups of programs funded under this source: the Research and Development programs, and programs under the Canada/Saskatchewan Economic and Regional Development Agreement (ERDA) on Advanced Technology.

Providing support in critical areas

Companies working in advanced technology are under even more pressure than traditional industries to introduce new or improved products to their lines. Since leading edge products have an acknowledged life span of 1.5 to 2 years, a disproportionate amount of company earnings must be spent on research and development. This risk is shared with companies by Science and Technology through a series of programs designed to assist and encourage research and product development. By stimulating research and development Science and Technology helps Saskatchewan firms become more productive and competitive in world markets.

Since their introduction in the 1984-85 fiscal year, these programs experienced a significant increase in industrial uptake, up from some 20 projects to over 100. The value of these projects, including federal and private sector contributions, totalled over $30 million. The Department shared the risk and levered federal funds through $7 million of direct assistance.

In addition to research and development, innovation and marketing are critical areas in high tech business development. The Canada/Saskatchewan Subsidiary Agreement on Advanced Technology responds to these special needs. Eight assistance programs under this Agreement help entrepreneurs and technology-related business with financing and investment, identifying and maximizing business opportunities, manufacturing, and marketing.

This fiscal year marked the second full year of operation for the Canada/Saskatchewan Subsidiary Agreement on Advanced Technology. This five year agreement is aimed at establishing and speeding the growth of advanced technology industries in Saskatchewan.

Through this agreement, the Department helped clients access assistance from an eight-part program which is equally cost-shared and administered by the governments of Saskatchewan and Canada.

This fiscal year, 37 projects were approved for support, involving a provincial commitment of almost $1.2 million. Under the Industrial Assistance Program of the Agreement, support was provided to firms carrying out strategic marketing studies, launching a variety of new products onto the marketplace, and financing research and development. Under the Innovation Climate Program of the Agreement, support was provided to firms and other groups and associations undertaking studies to identify and refine growth factors relevant to the continued development of the advanced technology industry in the province, and to identify and promote opportunities for commercialization of research into advanced technology products and processes.

Advising inventors and entrepreneurs

A wide variety of financial and advocacy assistance was provided to the province's entrepreneurs and inventors to help them develop their technological innovations and plan the establishment or expansion of new technology businesses.

This fiscal year, over 100 inventors participated in the Inventor Services Program. Over 200 companies received assistance in the form of funding, referral to other agencies or departments, business counselling, and advice from experts. This assistance helped these entrepreneurs establish new businesses, develop business plans, commercialize technology products, and develop marketing plans.

Supporting university research

Through the Research and Development Fund, offices of university research were established at both provincial universities. These offices were formed to facilitate and promote university contract research, and to provide opportunities for technology transfer from university labs to the marketplace and to increase opportunities for university-industry collaboration.

The Office of Research Services at the University of Saskatchewan was established in May 1985 under a contractual arrangement between the university and Saskatchewan Science and Technology. Through this three-year agreement, the Department provided $200 thousand annually toward the Office's operating costs. This fiscal year, the Office co-ordinated over $32 million in grant and contract research support for private enterprise, crown corporations, international agencies, the university, and government.

The Office also focuses on facilitating linkages between the university's research community and the private sector. To this end, a computer database was established to provide information on possible sources for funding university research, and an informational package on the research skills of faculty and staff was developed and distributed. To enhance industry's awareness of research undertaken at the university, the Office publishes bulletins annually outlining research activities at the university. The co-operative accomplishments between the university and private sector are illustrated in the university's contractual arrangements with organizations such as the Veterinary Infectious Diseases Organization (VIDO), CIBA-GEIGY, Amsbiotech, and Molson's Brewery.

The Office of Research at the University of Regina was formed in January 1985 under a similar contractual agreement. Under the agreement, Science and Technology provided $100 thousand per year for a three-year period toward the Office's operating costs. This fiscal year, the Regina Office of Research co-ordinated over 203 successful and on-going research projects for a total value of $3.6 million in grant and contract research support for industry, government, crown corporations, and university and international agencies.

The Office's on-going efforts to encourage university-industry collaboration are reflected in the regular publication of a research directory. This directory lists faculty members, their expertise and research interests, as well as on-going research projects. With a view to strengthening co-operative relationships, the Office held a seminar in March, 1987 to acquaint the advanced technology industry with activities in the university community. This co-operative relationship is being further realized through the creation of two SaskTel research chairs.

Demonstrating leadership

Saskatchewan Science and Technology plays an advocacy and leadership role in the development and implementation of policy affecting the advanced technology industry. This year, these activities included asserting our influence provincially, nationally, and internationally.

Maximizing provincial research dollars

This fiscal year, the government-wide Research Expenditures Package was updated to reflect actual 1985-86 and approved 1986-87 research expenditures by department. Working with other provincial departments, Saskatchewan Science and Technology co-ordinated and analyzed the $85.4 million spent annually on provincial research activities in order to increase the efficient allocation and priorization of research activities in support of government policy and program initiatives.

Statistical reports on federal government scientific expenditures in Saskatchewan, and reports on federal science and technology contracts awarded to Saskatchewan contractors, were also published.

Leading Canada in science and technology policy

Through the Department, Saskatchewan continued its role at the forefront of national and international science and technology activities. The Department provided leadership to a federal-provincial task force which developed the new National Science and Technology Policy for Canada.

Opening international doors

A successful and thriving advanced technology sector in Saskatchewan requires the active pursuit of joint ventures and market niches beyond Canadian borders. This fiscal year, Saskatchewan's reputation for technological expertise continued to grow world-wide, through the export of our advanced technologies and products.

To create a receptive environment for increased exports, Saskatchewan Science and Technology, in conjunction with other provincial departments and agencies, developed industrial links with the United States, countries in the Pacific Rim, and Scandinavian and Western European countries.

These interactions included the exchange of scientific and technological information, technology transfer, joint venture activities, and attracting foreign advanced technology firms into the province.

Making these international linkages is facilitated by the world-wide recognition of Saskatchewan's Model for Advanced Technology Development. This Model was recognized as a successful approach to technology development by the Organization for Economic Co-operation and Development (OECD) in the published results of its study of innovation in Western Canada. The completed report has been distributed world-wide.

Exploring new frontiers

Saskatchewan is highly respected for its space and communication expertise, and has undertaken to build on this achievement. The Department's efforts, designed to help Saskatchewan firms participate in the Space Program, included increasing the awareness of Saskatchewan firms about the opportunities in the Canadian Space Program, and negotiating with the federal government to maximize such opportunities for Saskatchewan firms.

Promoting science and technology awareness

Effective communication is the key to establishing the credibility of the province's advanced technology community. This fiscal year, the Department initiated a major communication and information thrust directed at provincial, national, and international target groups.

Launching a major initiative

A number of business-related and public awareness materials were produced to promote the province's advanced technology sector nationally and world-wide. The Department also actively represented the sector at several technology-related shows and exhibitions. Public awareness of the scientific and technology-based activities in the province was heightened through the television series, "A Fine Science." Co-sponsored by the Department, the series showcased developments in Saskatchewan's scientific community.

The Department's initiative has resulted in an increased understanding and knowledge amongst the general public, industry, and government, of the role of science and technology in Saskatchewan's economic development and prosperity.

The record: Achieveing results for Saskatchewan

Strengthening the economy

The success of the Saskatchewan Model for Advanced Technology Development is reflected in the results.

Partnership between science, industry, and government

Since its formation, Saskatchewan Science and Technology has shared the risk with the advanced technology industry, and has acted as an advocate for the sector, levering federal support and funds.

- The financial support given to firms through Saskatchewan Science and Technology since its inception is over $7 million.
- This $7 million investment has resulted in projects with a total research and development expenditure of $30 million.
- Over 400 contacts were made with inventors seeking assistance under the Inventor Services Program since the program was implemented.
- Every dollar expended by Saskatchewan Science and Technology levers $3.24 from the federal government and industry, for Saskatchewan-performed research and development.
- Over $73 million federal dollars have been attracted to the province in 1985, and $239 million since 1982 to provide scientific and technological services to the advanced technology industry.

Diversifying Saskatchewan's economic base

Saskatchewan's advanced technology industry has mushroomed since 1982. Through new and established firms the benefits of advanced technology are being felt throughout Saskatchewan industries, by enhancing productivity and competitiveness, cutting costs, and improving safety in agriculture, mining, the oil industry, manufacturing, and service industries. Since 1982 the advanced technology sector has evolved and realized tangible results which help to diversify our provincial economy.

- Since 1982, the number of firms working in advanced technology has more than quadrupled, from 39 to 170.
- There are six major firms working in advanced technology in Saskatchewan with annual sales over $10 million each.
- The average advanced technology firm in the province has 15 employees.
- In 1982, virtually the entire industry was based in Saskatoon. Today, Saskatoon has 50 percent, Regina 30 percent, and the remaining 20 percent is widely distributed in other Saskatchewan communities.
- Saskatchewan's research and development infrastructure base includes over 20 agencies and organizations with industrially-oriented expertise and facilities.
- Entrepreneurs and investors, along with private and public research agencies, universities, and a network of training institutions have already created a dynamic advanced technology sector, or critical mass, in Saskatchewan.

Increasing sales and creating new jobs

Advanced technology is a multi-million dollar industry. Sales figures of Saskatchewan firms have increased dramatically. This financial success means jobs for the people of Saskatchewan. This sector is providing our young people with career opportunities equal to any in Canada. It gives our skilled university and technical school graduates highly paid jobs at the leading edge of technology.

- Sales figures for Saskatchewan's advanced technology firms were $81 million in 1982, and are now approximately $400 million.
- A large percentage of advanced technology products made in Saskatchewan are exported to

other provinces in Canada, and to the United States and abroad.

- Employment in the advanced technology industry has grown from 1,700 in 1982 to 2,500 in 1986

- Advanced technology firms are reaching into the province's two universities and four technical institute campuses for brainpower and technical know-how. And this infrastructure is also being enhanced and strengthened by two new university chairs facilitated by Science and Technology.

Earning respect for Saskatchewan

Through the partnership of science, industry, and government, Saskatchewan's advanced technology industry is developing a world-wide reputation for innovation, excellence, and leadership.

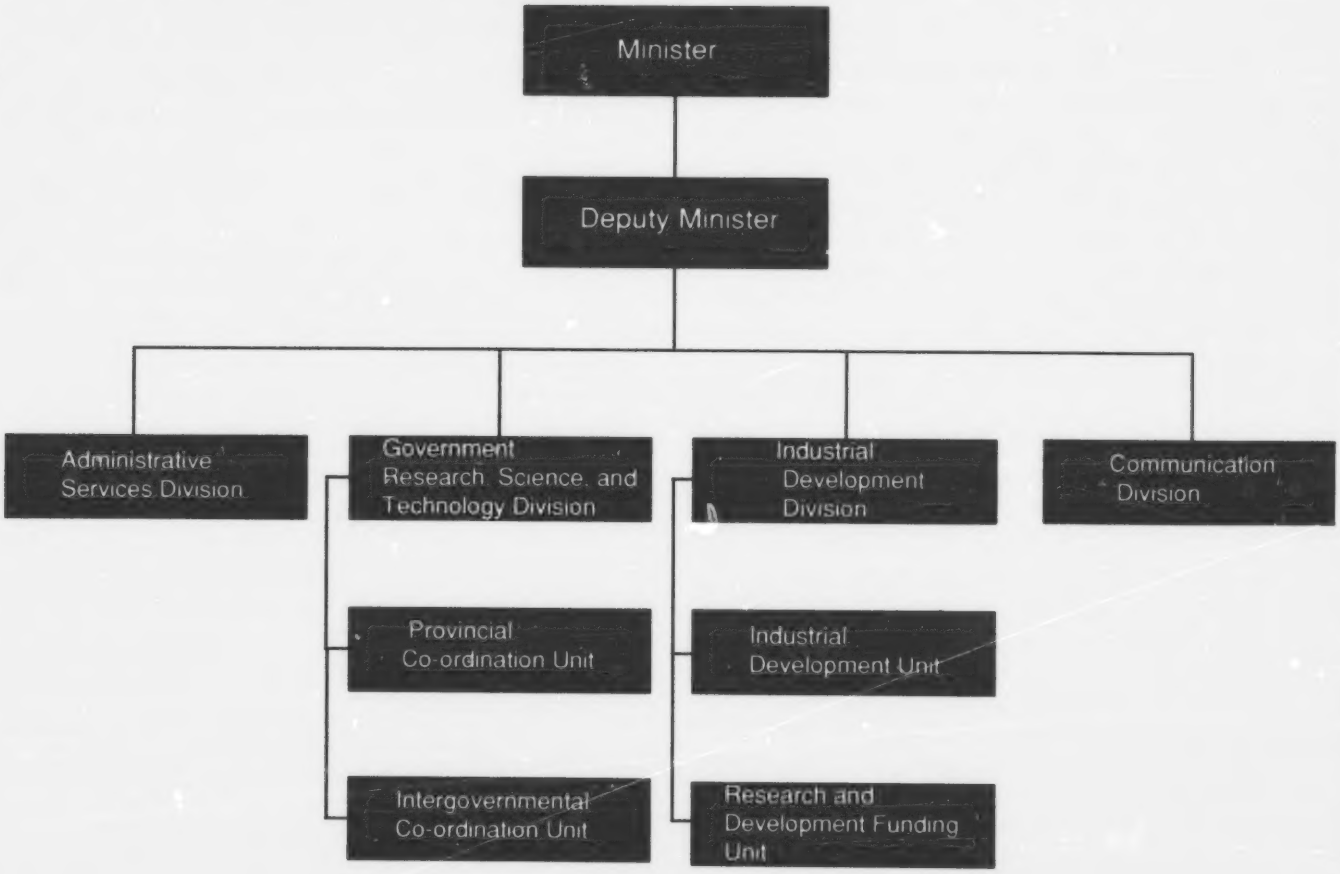
- Saskatchewan has earned a top Canadian ranking for its communications and space technology, and is in a position to attain national leadership in agricultural biotechnology, agricultural value-added products, and in-structure fibre optic network systems.

- Saskatchewan is positioned to expand into emerging areas of new technology such as health care products, drug research, artificial intelligence, aerospace, and biotechnology.

- Saskatchewan lead Canada in developing a first ever National Science and Technology Policy.

The organization and work: Serving Saskatchewan

Science and Technology organization as of March 31, 1987



Industrial Development Division

This Division sees, first hand, the exciting new technology advances in Saskatchewan.

This fiscal year it worked directly with advanced technology firms in Saskatchewan monthly, on a one-to-one basis. The Industrial Development Division helps firms pinpoint their needs and select the best possible solutions or programs. The staff in the Division consult regularly with expanding advanced technology firms, and provide advice on business planning and technology development. This fiscal year, the Division helped 50 new technology firms become established in Saskatchewan.

Promoting innovation and new ventures

The Industrial Development Division administered the Inventor and Entrepreneur Programs, which helped technology innovators develop technologically and commercially viable products and businesses.

Through the Inventor Program, over 100 inventor queries were processed in the last fiscal year, through two centres, one in each of Regina and Saskatoon. Some of these inquiries resulted in the commercial evaluation of the new inventions at the Innovation Institute in Oregon. The Institute offered advice and counselling on patenting, licensing, and other options available to inventors to help them decide whether to take the next step in product development. When inventors decided to proceed with commercialization, advisory services were provided by the Industrial Development Division on marketing information sources, business consultants, funding sources, and technical services.

Through the Entrepreneur Program, the Industrial Development Division provided counselling and corporate development assistance to entrepreneurs by assisting with business planning, including marketing strategies. It helped firms identify funding sources, including venture capital.

Other vehicles of assistance offered by the Division included "Lunch and Learn" seminars, and co-sponsorship of a venture capital seminar. This Division represented Saskatchewan advanced technology companies at technology transfer shows, including Barclay's Techmart in Birmingham, England, in order to investigate and identify international marketing opportunities through licensing and joint venture.

Assisting new industries

The Industrial Development Division worked to support existing industry and attract new industries to Saskatchewan. In this way, the Division helped to broaden Saskatchewan's industrial base. Through the Research and Development Programs, the Division helped firms access contractual funding for research and development projects.

This fiscal year, contracts totalling over $2.7 million were awarded for 36 research and development projects conducted by 30 companies. (See Table 1.)

The Industrial Development Division has also provided assistance of $435 thousand toward the creation of two industrial research chairs with SED Systems Inc. and BIOSTAR, at the University of Saskatchewan.

The purpose of the SED chair is to promote research in the area of micro-electronics/ telecommunications, while the BIOSTAR chair will promote research into genetically engineered livestock vaccines.

Governmental Research, Science, and Technology Division

This Division ensures that the province receives maximum benefit from money spent on research, science, and technology by both the Canadian and the Saskatchewan governments. In support of this function, the Division ensures the continued responsiveness of government policies and programs to the needs of the advanced technology industry. As well, the Division undertakes specific developmental initiatives in strategic areas of high technology of benefit to the future diversification and growth of the provincial economy. The Division also represents the province's interests in maximizing advantages for Saskatchewan from federal government initiatives in science and technology. To facilitate the advancement of science and technology in Saskatchewan, the Division ensures that the province's science and technology capabilities are effectively communicated both within and outside of Canada.

Stimulating university research

Through liaison with research offices at the University of Saskatchewan in Saskatoon, and the University of Regina, private companies were given a window into research being done by both universities. The interaction between the Universities, the private sector, and government were stimulated as a result of increased awareness and accessibility to research completed by the province's universities.

Tracking research funds

During this fiscal year, the Government of Saskatchewan spent over $85 million in direct support of research and development. For its third year, the Government Research Division gathered data on these research and development efforts, and electronically compiled the "Research Expenditure Package." Analysis of this package is helping the province eliminate duplication of research expenditures, and is helping to direct efforts consistent with provincial priorities.

Information sharing

The Governmental Research, Science, and Technology Division was active in sharing information and co-ordinating related research and development projects amongst provincial government departments. In addition, the Division co-ordinated the Statistics Canada survey on scientific activities of the Government of Saskatchewan. This information provides a valuable tool for comparison of research and development funding across the various provincial and federal jurisdictions.

Recognizing science skills of youth

The Division was active in a number of special projects, including the Science Fair Award Program. Under this program, winners of regional school science fairs are recognized for their innovation in applying classroom science skills to the formulation of a practical and demonstrable concept.

Negotiating for Saskatchewan

Delivery of programs under the Canada/ Saskatchewan ERDA Subsidiary Agreement, as initiated by the Intergovernmental Unit of the Division, was continued this fiscal year. The ERDA programs were designed to encourage a climate for innovation and to encourage the development of advanced technology business in Saskatchewan. During the fiscal year, over $1.9 million was approved by the provincial and federal governments for a variety of projects. The provincial commitment to these projects totalled over $900 thousand. (See Table 2.)

The Division also provided leadership for the New Technology Steering Committee, set up to implement the Canada/Saskatchewan Memorandum of Understanding. The Committee carried out

extensive reviews of research and development activity in Saskatchewan in the areas of agricultural biotechnology, aquaculture, micro-electronics and communications, food technology, highly qualified personnel, the dissemination of resources, and potash, lignite, and heavy oil. The new Course of Action allows for improved communication and interaction between the federal government and the province.

The Intergovernmental Unit of this Division monitored, analysed, and co-ordinated responses to federal policy initiatives and changes such as the federal matching grants policy, Technology Opportunities in Europe, the Technology Outreach Program, the Canadian Space Program, tax reform, and free trade.

It also assumed a leadership role for the interprovincial response to the federal government's call for a National Science and Technology Policy. Papers on provincial and territorial views on the development of a science and technology policy and important policy issues were prepared. These efforts have helped to improve the federal government's understanding of Saskatchewan's and other provinces' views on science and technology. This fiscal year this activity culminated in the signing of the National Science and Technology Policy on March 12, 1987. It established the framework for federal/provincial/territorial co-operation in bringing science and technology to bear on the economic, social, cultural, and regional development of Canada.

Active abroad

The Government Research, Science, and Technology Division was active in consultations with countries including the United States, India, the Soviet Union, Israel, Italy, Australia, New Zealand, Greece, West Germany, France, the Netherlands, Sweden, Norway, Denmark, Britain, and Pacific Rim countries such as Japan, China, and Korea. Delegations from many of these countries were hosted, resulting in the exchange of information and identification of possible joint research and joint ventures.

Direct contacts were established between the Governmental Research Division and Canada's trade and scientific counsellors posted abroad. These contacts helped to improve a world-wide information flow on Saskatchewan's advanced technology capabilities.

The Division was involved in the negotiation of a Second Plan of Action with respect to the "twinning" relationship between Jilin Province of China and Saskatchewan. In addition, a Jilin Fibre Optics group visited Saskatchewan resulting in continued sales of telecommunication equipment to China. The stage was set for the sale of genetic materials, embryo transfer equipment, and forage seeds to Jilin following the visit to Saskatchewan of a veterinary science delegation.

The Division also supervised the final development of an OECD review of science and technology resulting in the publication and distribution of a report titled "Innovation Policy in Western Canada."

Communication Division

The Communication Division is an information clearing house between Saskatchewan Science and Technology and the many publics it serves. Special emphasis is placed on raising the public's awareness of the science and technology sector and its potential to diversify the province's economy.

Developing communication tools

Supporting the work of other Divisions, to strengthen growth in the advanced technology sector, this Division developed an integrated communication strategy, comprehensive programs, and appropriate tools.

The accomplishments of the advanced technology sector were publicized regularly, through a number of vehicles such as news releases, news conferences, audio visual presentations, and the Department's quarterly newsletter, "Frontiers."

In addition, the second edition of the Technology Transfer Catalogue was developed in direct response to the highly successful first edition. The first edition generated interest in Saskatchewan's technological capabilities world-wide, and was the impetus which resulted in several international deals for Saskatchewan firms. The Catalogue raised the awareness and profile of Saskatchewan's advanced technology expertise nationally and internationally, and encouraged several foreign delegates and delegations to visit Saskatchewan to further explore the province's technological capabilities. The second edition of the Technology Transfer Catalogue, which includes 30 percent more firms, profiles Saskatchewan's advanced technology firms and their products, and continues to help companies make provincial, national, and international connections.

As a sister document to the Technology Transfer Catalogue, a booklet entitled "Support For Advanced Technology in Saskatchewan" was developed to profile the province's rich infrastructure base. The booklet profiles research and development centres, educational and training facilities, and technology business support organizations.

The funding programs and support services of the Department were publicized through a variety of media. Advertisements were placed in provincial newspapers and magazines to encourage innovators and entrepreneurs to access the Department's programs.

Reaching people

Because the flow of information is vital to serving the advanced technology sector, this Division processed information on an on-going basis. Provincial and national newspapers and magazines, as well as other materials and reports received by the Department were monitored for information of interest and relevance to the Department and to advanced technology industry in Saskatchewan. This fiscal year a database was established to reference these articles of interest, for easy retrieval.

The Communication Division responded to requests from industry and government for information and materials, and regularly disseminated technology-related information to an audience of researchers, innovators, investors, educators, public servants, ambassadors, and entrepreneurs world-wide.

With the move of the Department's head office to Saskatoon, the Communication Division organized and co-ordinated the new head office opening.

Keeping abreast of industry needs

With the appointment of Ray Meiklejohn as Minister of Science and Technology this fiscal year, the Communication Division organized and co-ordinated meetings between the new Minister and technology interest groups. These meetings were arranged so that the Minister could learn, first-hand, the interests and concerns of the advanced technology community.

Building a high profile

Special events, such as news conferences, audio-visual presentations, exhibitions, and trade and technology shows raise the profile of Saskatchewan's supportive environment for technology business. During this fiscal year, the Communication Division, in co-operation with the Industrial Development Division, promoted Science and Technology at a number of exhibitions, such as the World Business Showcase at Expo '86, and Barclay's Techmart in Birmingham, England. The Division also represented the Department on the board of Directors for Index '87, a major industry exhibition.

The Division also helped several firms organize news conferences and other publicity opportunities. These events stimulated interaction between the Department, the public, and the advanced technology sectors in Saskatchewan, Canada, and abroad.

Administrative Services Division

The Administrative Services Division manages administration tasks for the Department, and interacts extensively with the Department of Revenue and Financial Services, the Public Service Commission, and other central agencies.

Managing people, paper, and process

This fiscal year, the Division provided support services to the Department in areas such as personnel, accounting, secretarial support, filing, mail, and purchasing. It assisted the Deputy Minister and Executive Directors in various projects, and provided advisory services to the Divisions. Administrative Services was responsible for the preparation and control of Departmental budgets.

The Administrative Services Division was extremely active this fiscal year with the move of the Department's head office from Regina to Saskatoon. The move entailed new staff recruitment, Departmental reorganization, and the establishment of systems and procedures.

The move of the Department was undertaken in September, and the transition was made successfully and smoothly due to co-ordination by this Division. With the move, the staff of the Department expanded to include an Administrative Services Co-ordinator, a Computer Manager, and additional support staff. The human resources administration function was assigned to the Department, computer systems were established, and electronic communication between offices in Saskatoon and Regina was introduced. Staff training in the use of these systems followed. Administrative procedures and practices required updating and revision, to respond to the move, and the new technology implemented by the Department.

The challenges ahead

Economic diversification through applied technology

Recognizing that technology transfer is an important key to accelerate the growth of the advanced technology sector and strengthen the province's economy, the Department continued exploring ways to facilitate technology licensing and joint business ventures. To that end, the Department investigated opportunities at Barclay's Techmart in Britain in October, and at the Toronto and Canadian High Technology Shows. The Department co-ordinated visits to advanced technology companies by visiting foreign delegations, which have resulted in licensing negotiations and agreements. The Department also developed the second edition of the Technology Transfer Catalogue to further publicize the technology requirements and offerings of Saskatchewan advanced technology firms.

The licensing of technology, which involves long-term agreements for the use of advanced technology processes, has the potential to give Saskatchewan firms the edge in developing products and processes to be applied to traditional and new industries to make them more effective, efficient, and competitive.

Developing biotechnology expertise

One of the most promising areas of technological development in the world today is biotechnology. And Saskatchewan has an important contribution to make in the area of agricultural biotechnology. Saskatchewan has an established reputation for its expertise in agricultural research and development of new varieties of agricultural products. Development of these products holds significant promise for both the province's and Canada's future economic development and diversification. Discussions have been initiated to identify the best mechanism to draw together agricultural biotechnology research and industrial expertise to form a critical mass in this area. This critical mass will help to expand the province's economic and employment base into the next century.

Meeting the future confidently

Advanced technology is an exciting and expanding frontier, and Saskatchewan is a Canadian leader in the field. This fiscal year, Saskatchewan Science and Technology shared the risk of innovation with the private sector, and the people of Saskatchewan shared the social and economic benefits of greater revenues, more jobs, and a more diversified economy. The Department will continue to build on the strong foundation that has formed and its commitment of maximizing the benefits of technology for the people of Saskatchewan.

Financial review

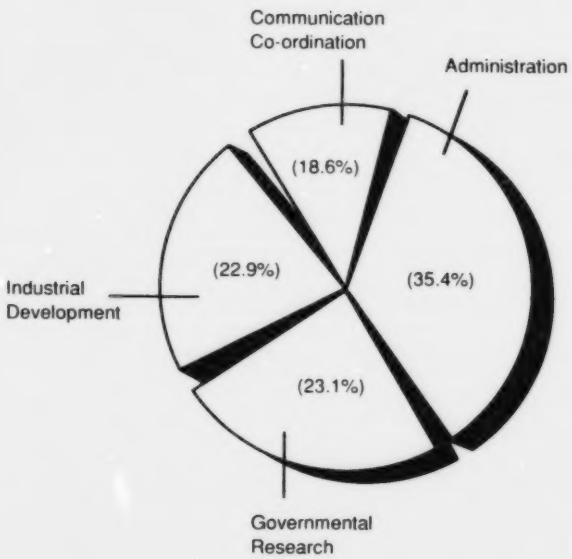
Statement of expenditures for the fiscal year ending March 31, 1987

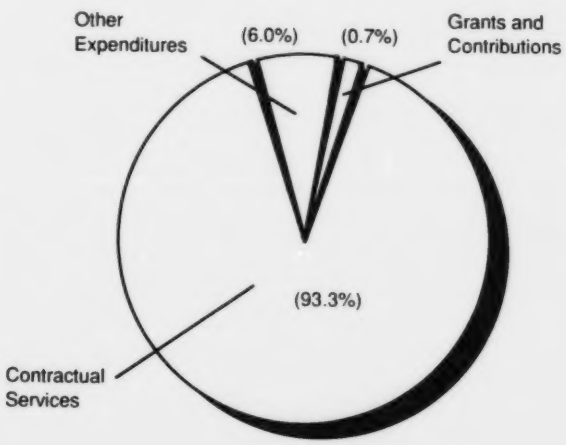
Consolidated Fund

Administration	$475,316
Governmental Research	310,509
Industrial Development	307,703
Communication Co-ordination	249,953
Total	$1,343,481

Saskatchewan Heritage Fund
Research and Development Division

Contractual Services	$3,411,083
Other Expenditures	222,271
Grants and Contributions	24,500
Total	$3,657,854





Tables

Table 1

Research and Development
Contractual Services
April 1, 1986 - March 31, 1987

Firm	$
Accutrak Systems Limited Regina Industrial Research	71,288
Avonlea Mineral Industries Wilcox Industrial Research (2)	69,950
CSP Foods Ltd. Saskatoon Industrial Research	22,800
Cartel Electronic Moose Jaw Industrial Research	8,250
Comco Manufacturing Ltd. Hague Industrial Research	5,137
Cominco Chemicals & Fertilizer Vanscoy Feasibility Studies	28,000
Conservation Energy Systems Saskatoon Industrial Research	3,500
Cortech Systems Ltd. Saskatoon Industrial Research	194,313
DataMaster Computer Services Regina Industrial Research	1,000
Develcon Electronics Ltd. Saskatoon Industrial Research	886,980
Eclat Air Exchange Systems Inc. Saskatoon Industrial Research	8,500
Heidi Controls Ltd. Saskatoon Industrial Research	575
Horizon Robotics Systems Inc. Saskatoon Industrial Research	7,500
Innovative Research Inc. Regina Industrial Research (2)	38,585
InterScience Industries Group Regina Joint High Technology Research	151,931
Lawtek Computer Systems Ltd. Saskatoon Industrial Research	74,687
Melis Consulting Engineers Ltd. Saskatoon Capital Equipment	14,178
Microseis Systems Saskatoon Industrial Research	10,000
Mraz Project Consultants Ltd. Saskatoon Industrial Research	8,500
Philom Bios Saskatoon Industrial Research (2)	113,675

Research and Development
Contractual Services
April 1, 1986 - March 31, 1987 (continued)

Firm	$
Prairie Systems Saskatoon Industrial Research	9,892
Resnet Inc. Saskatoon Industrial Research	660,652
Robinson Diesel Injections Ltd. Saskatoon Request for Proposals	11,802
Rogers Engineering Ltd. Saskatoon Industrial Research	3,900
Sci-Tec Instruments Inc. Saskatoon Industrial Research (2)	77,211
SED Systems Inc. Saskatoon Request for Proposals (3)	55,862
Simulators International Inc. Saskatoon Industrial Research	2,250
Supercart International Inc. Regina Industrial Research	212,750
Town & Country Meats (1986) Ltd. Estevan Industrial Research	660
Univision Industries Ltd. Biggar Industrial Research	3,150
Total value of contracts signed during the fiscal year	***$2,757,478**

Total work done & paid out to firms $1,967,260.14

*Includes projects extending to 1989

Table 2

Canada/Saskatchewan Subsidiary Agreement on Advanced TTechnology
Grants and Contributions
April 1, 1986 - March 31, 1987

Firm	$
Avail Inc. Saskatoon Market Support	17,500
Beck Technology Inc. Regina Bridging Capital	6,133
Capa Software Corp. Saskatoon Market Support	3,652
Cartel Electronics Inc. Moose Jaw Market Support	33,750
Co-operators Data Services Ltd. Regina Market Study	12,733
CIBA-GEIGY Canada Ltd. Regina Market Study	34,650
City of Regina Regina Development Analysis	31,520
Cognitive Control Corporation Regina Task Force and Project Teams	58,000
Cortech Systems Inc. Saskatoon Market Study and Bridging Capital	250,676

Firm	$
Develcon Electronics Inc. Saskatoon First-user	15,000
Distinctive Electronic Manufacturing Inc. Saskatoon Market Study	29,000
DMEnterprises Inc. Saskatoon First-user	47,952
DWS Energy Ltd. Hanley Market Study	27,940
Fre-Flo Oil Industries Ltd. Estevan First-user	12,685
Horizon Robotics Systems Inc. Saskatoon First-user	5,398
Innovative Research Inc. Regina First-user and Bridging Capital	76,053
International Road Dynamics Inc. Saskatoon First-user (2)	23,633
International Sanitation Inc. Saskatoon Market Study	21,750

Firm	$
InterScience Industries Group Regina Bridging Capital	100,000
Joytec Ltd. Saskatoon Market Study	32,263
KemDec Computer Systems Inc. Saskatoon First-user	2,864
Lawtek Computer Systems Ltd. Saskatoon First-user	80,000
L.C. Communications Ltd. Saskatoon Market Study	5,250
Manitou Industries Ltd. Neilburg First-user	10,000
MediaComp Software Systems Ltd. Saskatoon Market Study, First-user & Bridging Capital	10,260
Philom Bios Saskatoon Bridging Capital	61,915
Prairie Data Systems Inc. Saskatoon First-user	7,995

Canada/Saskatchewan Subsidiary Agreement on Advanced Technology
Grants and Contributions
April 1, 1986 - March 31, 1987 (continued)

Firm	$
Sci-Tec Instruments Inc. Saskatoon Bridging Capital and Market Support	87,240
Sorenson Manufacturing Ltd. Birch Hills Bridging Capital	50,000
University of Regina Regina Development Analysis	15,000
Total value of contracts signed during the fiscal year	**$1,170,812**
Total work done and and paid out to firms	**$976,189.24**

Notes

Total value of contracts and payments indicated reflect only provincial commitments and payments (i.e. do not include federal commitments).

Payments include work done under contracts signed in the current fiscal year, as well as contracts signed in prior fiscal years.

Table 3

Other Heritage Fund activities
April 1, 1986 - March 31, 1987

Other Project Expenditures	$
Office of Research, University of Regina	100,000.00
Office of Research, University of Saskatchewan	200,000.00
Inventor Services Information	6,516.96
Inventor Services Centre, University of Regina	20,000.00
Inventor Services Centre, Saskatchewan Research Council	20,000.00
Entrepreneur Program and Special Studies	367,878.90
Total	**714,395.86**